

amounted to little more than enhancements to the custom calling features (such as call forwarding or call waiting) that were already available on modern local Central Office switches.²⁰ Thus, by using the Common ONA Model and raising claims of technical harm and technical infeasibility, the BOCs were able to prevent the adoption of a truly unbundled, open architecture as originally envisioned by the Commission. Moreover, the BOCs priced the BSAs (which enhanced service providers were required to acquire as a condition of obtaining the limited set of BSEs) so high that they have proven largely unattractive to enhanced service providers. Instead, enhanced service providers have continued to buy ordinary business lines in order to offer services to their own customers. These tactics, coupled with refusals to provide for the collocation of enhanced service provider equipment in their local Central Offices, effectively killed the Commission's initial attempts at unbundling.

Although the Commission, in the face of stiff BOC opposition, refused to order what it referred to as fundamental unbundling, it recognized that further unbundling might be in the public interest. Consequently, the Commission ordered the BOCs to study further unbundling through the Information Industry Liaison Committee (IILC) within the Exchange Carriers Standards Association (ECSA).²¹ As a result of the FCC's order, the IILC eventually established a group to address issues relating to network unbundling. This group, named the Task Group for IILC Issue 026, included both BOC and non-BOC representatives. The Task Group for IILC Issue 026

²⁰ For a more complete discussion of these issues see "Open Network Architecture: A Promise Not Realized," Hatfield Associates, Inc., Boulder, CO (April, 1988).

²¹ Filing and Review of Open Network Architecture Plans, CC Docket No. 88-2, Phase 1, Memorandum Opinion and Order, 4 FCC Rcd 1, at 43, para. 72 (1988) (BOC ONA Order). The ECSA was subsequently renamed the Alliance for Telecommunications Industry Solutions (ATIS).

developed a physical and a logical unbundling plan for the local exchange network. In April, 1995, the Task Group reached consensus on Issue 026, and a full IILC meeting subsequently approved the closing documentation. It included the opening of 13 AIN interconnection points. Note that the IILC process alone took several years to complete and, while it led to agreement on some interconnection points, it still left unresolved a host of policy, regulatory, and business issues.

Two other developments during the IILC's deliberations on the unbundling issue are worth noting. First, in late 1991, the Commission launched a Notice of Inquiry to explore the public policy issues relating to the implementation of intelligent network architectures by local telephone companies.²² The Commission's stated goal in the proceeding was "to encourage development of future local exchange networks that are as open, responsive, and procompetitive as possible, consistent with our other public interest goals, such as ensuring network reliability and integrity and avoiding the imposition of uneconomic costs."²³ It should be emphasized that, in launching the Notice of Inquiry, the Commission's primary focus was on giving third parties greater access to the intelligent network architectures being implemented by the BOCs rather than on unbundling local loops, switching, and transport.

As characterized by the Commission in the subsequent rulemaking proceeding,²⁴ parties other than the LECs responded by urging the Commission to intervene to ensure that the LECs

²² In the Matter of Intelligent Networks, CC Docket No. 91-346, Notice of Inquiry, 6 FCC Rcd 7256 (1991) (Notice of Inquiry).

²³ Notice of Inquiry, 6 FCC Rcd at 7256, para. 1.

²⁴ In the Matter of Intelligent Networks, CC Docket No. 91-346, Notice of Proposed Rulemaking, 8 FCC Rcd 6813 (1993) (Notice of Proposed Rulemaking).

do not frustrate competition by developing the intelligent network in a closed, proprietary manner that would foreclose open access. The Commission also noted that these parties argued that the intelligent network would be unlikely to develop properly in response to market forces because of (a) the LECs' bottleneck control over the interface between the intelligent applications and the network, (b) the LECs' control over further intelligent network technical developments and implementation, and (c) the LECs' historical resistance to opening their networks to applications by third parties.²⁵ According to the Commission, the LECs, on the other hand, strenuously argued that market forces were sufficient to ensure procompetitive development of the intelligent network. The Commission went on to note that "[t]hey [LECs] argue that regulatory action is unnecessary and potentially harmful as it could cause market distortions and network inefficiencies, even potentially compromising network reliability."²⁶

In the face of the claims by the LECs/BOCs, especially those relating to network reliability, it is understandable that the Commission took a very cautious approach. It suggested rules and in those rules proposed that third parties only be given mediated access to the intelligent network through the Service Management System²⁷ rather than at the SCP or the local switch (SSP). It also suggested that it would adopt a serial approach in which mediated access might eventually be extended to the SCP and local switch, but only after careful examination of the

²⁵ Notice of Proposed Rulemaking, 8 FCC Rcd at 6815, para. 14.

²⁶ Notice of Proposed Rulemaking, 8 FCC Rcd at 6815, para. 15. (Footnote omitted. The omitted footnote specifically refers to, among others, Ameritech's Comments and Reply Comments in the proceeding.)

²⁷ Service Management Systems are associated with the administration and maintenance of the SCPs in the AIN.

benefits and risks at each step. At the time that the Telecommunications Act of 1996 became law in February of 1996, the Commission had not issued an order actually requiring mediated access through the SMS and, as indicated above, the IILC was unable to agree on other forms of fundamental unbundling. Thus, almost exactly a decade passed between the time that the FCC set forth its vision of an unbundled, open local exchange architecture and the signing into law of the '96 Telecommunications Act in February of 1996, and no significant progress occurred during that time.

Not only was there a decade-long delay, it is likely that the unbundling requirements incorporated in the '96 Telecommunications Act resulted from a change in the BOCs' perception of their own strategic interests rather than from any fundamental technical development. Their acquiescence to the unbundling requirements was surely predicated upon obtaining relief from the line-of-business restrictions imposed by the Modification of Final Judgment. In other words, the movement toward a more unbundled, local network was due in a large part to the presence of other policy/regulatory incentives rather than a sudden change of heart regarding the desirability of providing access on such a basis. In short, the BOCs can speed up the provision of advanced forms of interconnection when it suits their strategic interests, and slow down or thwart them when they do not.

I want to make it clear that, in tracing this history of unbundling and ONA, I am not necessarily being critical of the Commission's past efforts to promote a more open architecture both in the original ONA and subsequent IN proceedings, nor in the steps it is taking in its interconnection proceeding to carry out portions of the '96 Telecommunications Act. Rather, I am using it as an example of how the BOCs, including Ameritech, can use claims of technical

harm and technical infeasibility in the provision of advanced forms of interconnection to thwart or delay the development of competitive services by unaffiliated long-distance carriers and other providers.

V. Response to the Affidavit of Daniel J. Kocher

Daniel J. Kocher submitted an affidavit with Ameritech's application to provide in-region, interLATA services originating in Michigan.²⁸ The Kocher Affidavit concludes that:

“ . . . from a technical perspective, Ameritech cannot reasonably engage in a concerted plan to discriminate in favor of itself or [the Ameritech affiliate] ACI, or against other telecommunications service providers. Furthermore, if Ameritech did attempt to engage in such discrimination, that discrimination would be easily detected.”²⁹

The joint affidavit of Richard J. Gilbert and John C. Panzar, also filed in support of Ameritech's application, relies, in turn, upon the Kocher Affidavit to reach certain conclusions regarding Ameritech's purported inability to discriminate against interexchange carriers competing with its long-distance affiliate.³⁰ Because the Kocher Affidavit deals with issues similar to the ones dealt with herein and because it reaches opposite conclusions to my own, I will address his analysis and conclusions in this section.

The essence of Mr. Kocher's conclusion is that discrimination in the quality of access services is impractical or infeasible. According to him, it is infeasible because such discrimination would involve modification of internal software and systems and would require the cooperation of

²⁸ Affidavit of Daniel J. Kocher, dated May 20, 1997 (Kocher Affidavit).

²⁹ Kocher Affidavit, at 4, para. 6.

³⁰ Joint Affidavit of Richard J. Gilbert and John C. Panzar, dated April 28, 1997, at 17, para. 29.

vendors and Ameritech's own workers coordinated across several departments. He also concludes that these types of internal modifications are not only difficult or impossible to achieve without affecting the quality of Ameritech's own services but are also easily detectable. He argues that discrimination in the provision of services and network elements to other carriers is not practical "because they utilize facilities, switches and systems that were specifically designed to automatically furnish nondiscriminatory service."³¹ Mr. Kocher points out that all categories of traffic (local, intraLATA toll, and interLATA toll) arrive on Ameritech's local network in random order, are carried on trunks and loops intermingled with traffic from many carriers, and users are switched by local and tandem switches pursuant to standard software and routing tables. He then goes on to conclude that "the prospect of [Ameritech] conducting a program of concerted discrimination . . . is wholly implausible."³² I strongly disagree with portions of Mr. Kocher's analysis and conclusions.

Before presenting the reasons for that disagreement, I would like to make one general observation. Mr. Kocher essentially ignores the Intelligent Network concept and related developments that are making the local exchange network increasingly programmable or software driven as I described above. Instead, he focuses on lower level switching and transmission functions rather than on the higher level functions, i.e., the service logic and associated data bases that are so critical to service differentiation in the competitive long-distance market.³³ He only

³¹ Kocher Affidavit, at 4, para. 8.

³² Kocher Affidavit, at 5, para. 8.

³³ Ameritech itself confirms the importance of such service differentiation in the interLATA market. In an accompanying affidavit, the joint affiants state that "[i]n a rapidly changing industry such as telecommunications, we anticipate that non-price consumer benefits, in the form of service

mentions AIN twice. He mentions it once in conjunction with Ameritech's SS7 network, but only in passing.³⁴ He mentions it again in conjunction with the deployment of two tandem switches by ACI, one in Detroit and one in Chicago. He does so in only one sentence: "Finally, both switches are equipped to support Advanced Intelligent Network ('AIN')-based services utilizing ACI's own SS7 network and databases."³⁵ In my opinion, failure to acknowledge and address Ameritech's ability to use its monopoly power over physical facilities (e.g., the local loop) to favor their own software driven services represents a serious omission on the part of the affiant.

I will now address what *is* discussed in the affidavit. Mr. Kocher argues that Ameritech's "computer-controlled [end office] switches are designed to operate under stored program control utilizing 'generic' software provided by the switch manufacturers."³⁶ He then argues that the software routines involved are designed to handle all traffic in a similar manner and that modification to that software would be impossible because it would jeopardize overall network reliability, the software is proprietary and controlled by the manufacturer, and any modification would void the manufacturer's warranty. Mr. Kocher ignores the fact that one of the most compelling motivations for separating the service logic from lower level switching functions (i.e., the intelligent network concept) was to allow *providers* to create new and different service offerings independent of the manufacturer and without waiting for the manufacturer to develop a

innovations and technological advances, would likely confer greater benefits upon telecommunications users than would price-related benefits." Joint Affidavit of Robert G. Harris and David J. Teece, dated May 12, 1997, at 96.

³⁴ Kocher Affidavit, at 18, para. 36.

³⁵ Kocher Affidavit, at 43, para. 81.

³⁶ Kocher Affidavit, at 6, para. 12.

new software generic. For example, a recent Bell Atlantic-sponsored tutorial on the intelligent network states the following under a general heading entitled "Benefits of Intelligent Networks".³⁷

AIN technology uses the embedded base of stored program-controlled switching systems and the SS7 network. The AIN technology also allows for the separation of service-specific functions and data from other network resources. *This feature reduces the dependancy on switching system vendors for software development and delivery schedules. Service providers have more freedom to create and customize services.* [Emphasis added]

Or, as the Commission itself reported, "... the BOCs contend that a major goal of AIN is to free them from the 'tyranny' of the switch manufacturer."³⁸ Thus, contrary to Mr. Kocher's assertions to the contrary, the intelligent network concept enables the BOCs, such as Ameritech, to modify service logic in order to customize services for specific end user or carrier customers. As I showed earlier, it is this ability to fine tune or customize their local networks that enables them to favor (a) their own interexchange operations over their interexchange carrier competitors and/or (b) their own end user customers over the end user customers of their interexchange competitors.

As noted, Mr. Kocher does not address the intelligent network concept, except in passing. Although Mr. Kocher refers to AIN functionality primarily in conjunction with ACI's tandem switches, it would not be correct to infer that AIN technology (or intelligent network technology more generally) is associated only with tandems. The AIN architecture clearly provides for "intelligence" or service logic to be incorporated in SCPs and/or in Intelligent Peripherals or adjuncts associated with individual end office switches. For example, the Bell Atlantic sponsored tutorial referred to earlier (and relying upon the AIN Release 1 architecture defined by Bellcore)

³⁷ "The Intelligent Network Tutorial," URL-<http://www.iec.org/tutorial/ain/>, downloaded February 2, 1997.

³⁸ Notice of Inquiry, 6 FCC Rcd at 7257, para. 5.

clearly shows an Intelligent Peripheral and adjunct connected directly to an end office SSP.³⁹

Indeed, in its comments in the Intelligent Network proceeding, Ameritech defines an adjunct as follows:

An 'adjunct' is a network system that provides service-specific logic in response to an AIN switching system. Adjuncts contain logic and programs that permit them to exchange information with AIN switches regarding calls in progress. An adjunct is functionally equivalent to an SCP as a service logic execution platform, but the adjunct communicates with an AIN switch via high speed data links rather than via 56 kbps CCS links like the SCP.⁴⁰

Thus, Ameritech could discriminate in favor of ACI or its customers by modifying the service logic residing in an SCP associated with an end office or in the attached adjunct.

Another area in which I strongly disagree with Mr. Kocher's conclusions relates to the provision of local distribution facilities, e.g., unbundled local loops. Essentially, he argues that (a) because the local loop facilities used to serve Ameritech's customers are co-mingled with the local loop facilities used by competitors and utilize the same distribution and feeder systems, and (b) because the loops are assigned by automatic systems that do not recognize the identity of the requesting carrier or customer, discrimination would be difficult to carry out and easy to detect.

However, just as the local exchange network is changing through the addition of increased intelligence that allows individual fine tuning or customization of services to meet specific customer requirements, so are the local distribution facilities. Rather than simply carrying ordinary analog voice and low-speed data signals, twisted pair copper loops are being used to carry high-speed digital signals as well. The products that permit the use of twisted pair copper

³⁹ In some implementations, the adjunct may be referred to as a Service Node.

⁴⁰ Comments of the Ameritech Operating Companies in CC Docket No. 91-346, dated February 28, 1991, at footnote 5.

loops for carrying high-speed digital signals are often referred to generically as xDSL, where DSL is an acronym for Digital Subscriber Line. Varieties of xDSL include: High Data Rate DSL (HDSL), Symmetric DSL (SDSL), Asymmetric DSL (ADSL), Very High Data Rate DSL (VDSL), and Rate Adaptive DSL (RADSL). All of these products use sophisticated digital signal processing and other advanced techniques to make use of frequency ranges that lie above those ranges normally used by voice transmission. Through the use of multiplexing, these systems can be used to carry a mixture of local, intraLATA long-distance, and interLATA long-distance voice, data, image, and even video services directly to customer locations.⁴¹

Since all of these systems attempt to squeeze additional capacity out of loop plant that was designed to carry less demanding voice signals, their performance is dependent on the condition of the individual copper pairs and the presence of other digital signals. This means that many copper lines may require individual treatment in terms of reconditioning or rebuilding in order to carry high-speed digital signals directly to the customers' premises. It also means that the performance, once installed, is dependent upon how other digital signals (e.g., standard T1 and ISDN) signals are carried within the same cable sheath or binder group. Because of this need for individual treatment and the susceptibility of the systems to interference from other signals within the cable, there is a significantly increased risk that Ameritech will discriminate in favor of its own competitive operations. The risk increases because Ameritech alone controls the pace and diligence with which the reconditioning or rebuilding is accomplished and the placement of digital signals within the cable itself.

⁴¹ According to a recent trade journal article, three of the BOCs have promised ADSL services to consumers. See Snyder, Beth, "ADSL pledge," Telephony (May 26, 1997), at 7.

VI. Summary and Conclusions

To summarize, because of the increased complexity of the required forms of interconnection, incumbent local exchange carriers have an increased ability to discriminate and to raise unfounded claims of technical harm and technical infeasibility in the provision of advanced forms of interconnection. Thus, they have the power to thwart or delay the development of advanced competitive long-distance services that are increasingly critical to interexchange carriers in differentiating their services in an intensely competitive market. Because these advanced forms of interconnection go far beyond the basic forms of interconnection required to achieve equal access following divestiture, past experience with the interconnection of traditional voice and data networks will be less useful as a regulatory tool for preventing, detecting, and remedying discrimination.

I hereby swear, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

Dale N. Hatfield
Dale N. Hatfield

Subscribed and sworn before me this 5th day of June, 1997.

Jamie Therman
Notary Public

**My Commission Expires March 11, 2000
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My commission expires: _____